**STEM Focus Group Meeting - May 29, 2014**

**Summary of Notes**

**What knowledge and skills are important to include in our STEM Curriculum?**

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| Theme | Knowledge/skills | Examples |
| Problem solving | Learn how to approach problems in the real world  Understand which pieces of data to include | Estimate a solution, imbed math in a problem solving experience |
|  | Solve technical issues | How systems and technology function when something fails |
|  | Develop a culture of logical thinking - connections between subjects | Logical proof |
|  | Build problem solving stamina – apply what is learned, stay with a problem when yhr solution is not obvious |  |
|  | Need balance of group work and individual work |  |
| Programming | Learn coding and languages | Lego mindstorms, robotics, Scratch in elementary and middle  JAVA in high school  AP Computer Science  Creation of video games |
|  | Understand the difference between the logic of programming and programming languages. Logic of programming can begin at an earlier age. |  |
|  | Develop methodical thinking and other quantitative skills |  |
| STEAM | Include art- can’t design software without art. | Math in art |
| Science as a process | State and test hypotheses, revise, test. Determine what produces data we can trust. |  |
| Systems thinking and design | Develop broader awareness | Large scale building: life safety, egress, electrical mechanical  Envelope  Internet  Environmental science, burning coal  Body systems |
| Math | Need basic math foundation first to build confidence | Learn algorithms |
|  | Real world applications so students don’t lose interest | Math in medicine |
|  | Students need to learn to decompose a problem and then solve it | Have students talk about their math |
|  | Students do not go into “STEM” careers, studies indicate it is about math | AP BC or AB Calc |
| Statistics/Data analysis | Learn what the formulas mean  Learn to analyze data and form a conclusion | Work with real world data sets instead of a textbook exercise.  Example: Turn census data into a math problem |
| Integrated projects | Critical thinking | Analyze large data sets, write a program to analyze data, summarize in an essay |
| Accounting/budget/finance | Knowing more than how to balance a checkbook | Lunch account, making change |
| World Languages | Start earlier, allow time to learn more than one  Introduce Chinese/Mandarin |  |
| Literature and social studies | Critically analyze journal articles instead of just quoting |  |